



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/042,949

01/09/2002

Tomohiko Shibata

782 211

4446

25191

7590

03/12/2003

BURR & BROWN

PO BOX 7068

SYRACUSE, NY 13261-7068

EXAMINER

WOJCIECHOWICZ, EDWARD JOSEPH

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/042,949

Applicant(s)

Shibata et al

Examiner

Edward Wojciechowicz

Art Unit

2815



— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

Art Unit: 2503

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1 and 8, the recitation that the III nitride film "includes at least Al element" is unclear as to the exact composition of this nitride layer.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7 are rejected under 35 U.S.C. 102(b), insofar as being understood, as being anticipated by Udagawa. Applicants' basic inventive structure appears to reside in a III nitride film which has a dislocation density less than  $1 \times 10^8 / \text{cm}^2$ . Udagawa teaches such a structure, for example at col. 15, l. 32, where the dislocation density of the Udagawa device may be lowered to less than  $1 \times 10^8 / \text{cm}^2$ , as claimed. Likewise, Udagawa also teaches the formation of III nitrides which may also contain aluminum, as discussed for example, at col. 16, l. 34.

Art Unit: 2503

It is noted that the temperature limitations of claims 4, 5, (along with claims 11 and 12) are process limitations that carry no patentable weight in structure claims. Furthermore, the reduced warpage of the base layer (less than 50 microns) would appear to be inherently met by Udagawa in view of the low dislocation density that Udagawa achieves. As stated above, the specific structure of the invention regarding the aluminum content of the nitride has not been clearly defined.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:


(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa, and further in view of applicants' admitted prior art as discussed in the specification. While Udagawa does not specifically discuss the use of a III nitride underfilm formed over the buffer film, such use of an underfilm is well known in the art as discussed by applicants on page 1 of the specification. This combination of buffer film and underfilm is a standard configuration in the prior art.

Art Unit: 2503

In addition, as stated above, the process limitations of claims 11 and 12 carry no patentable weight, and the degree of warpage claimed would appear to be inherently met by Udagawa once the desired dislocation density is achieved.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Wojciechowicz, whose telephone number is (703) 308-4898, or to SPE Eddie Lee whose number is 703-308-1690.

  
EDWARD WOJCIECHOWICZ  
PRIMARY EXAMINER  
GROUP 2500

Edward Wojciechowicz:ew

March 10, 2003